

2019 NOVIC III Bell Pepper Trial

Trial Goal

Evaluate bell peppers for early production, as well as overall quality, yield and flavor. Varieties were chosen based on input from growers and NOVIC breeders, and included F1 hybrids as well as OPs. An effort was made to include varieties available as organic seed, though some entries are not. King of the North was included in grower trials but not the research site trial.



Table 1. Trial Varieties and Seed Sources

Variety	Seed.Source	Organic
Ace F1	Johnny's Selected Seeds	N
Aristotle F1	Seminis	N
CU #3	Cornell Breeding line	N/A
CU#4	Cornell Breeding line	N/A
Early Red Sweet	Turtle Tree Seed	Y
Flavorburst F1	Park Seed	N
King Crimson	High Mowing Seeds	Y
King of the North	High Mowing Seeds	Y
Peacework	Fruition Seeds	Y

Locations

Homer C. Thompson Research Farm, Freeville NY
 Muddy Fingers Farm, Hector NY
 Sparrowbush Farm Hudson NY
 Blue Star Farm, Stuyvesant NY

Trial Specifications

Varieties were seeded on April 4 in the greenhouse, and transplanted in the field June 4 into raised beds with black plastic mulch. Plants were somewhat oversized at transplanting and many were already flowering. This likely contributed to a high rate of lodging later in the season, and a subsequent need to trellis plots. Trials were planted in in Random Complete

Block Design (RCBD) with three blocks, with all 8 trial entries in each block. 15 plants were planted in each trial plot, with some being smaller due to plant numbers. See protocols and data sheets for data collection details.

‘Total count’ refers to total number of fruit harvested. Marketable count were those fruits suitable for sale (free of blemishes, suitable size and shape). Marketable weight is in lbs. Fruit measurements are in cm.

Results

Table 2. Table of Means and Groups. Note: Letters indicate entries which are not statistically different for that trait. For example, all entries with an 'a' are not statistically different for that trait.

Variety	Total.Count		Mktble.Count		Mktble.Wght		Width		Length		Brix	
Ace F1	51.3	b	39.7	ab	10.6	a	74.5	a	112.6	a	7.3	a
Aristotle F1	15.3	d	6	d	3.4	b	73.4	a	103.7	a	7.9	a
Cornell Breeding line #1	28	bcd	12	bcd	3.8	ab	73.1	a	82	a	6.8	a
Cornell Breeding line #2	32.5	bcd	13.7	bcd	5.3	ab	93.2	a	75.8	a	7.7	a
CU #3	34.5	bcd	18	bcd	5.5	ab	80.2	a	96.2	a	8	a
CU #4	35.6	bcd	21.9	bcd	7	ab	76.4	a	89.5	a	7.7	a
Early Red Sweet	78.7	a	64.3	a	8	ab	62.3	a	67.5	a	8.5	a
Flavorburst F1	20.8	cd	10	cd	5	ab	71.7	a	106.4	a	7.7	a
King Crimson	42	bc	31.5	bc	9.8	a	83.8	a	81.8	a	8.1	a
Peacework	38	bcd	26.3	bcd	6	ab	64.6	a	109.3	a	10.4	a

Pepper anthracnose (*Colletotrichum spp*) was a significant problem in the research site trial and significantly impacted yields, especially in the later season (last harvest was on September 12 for this reason). As a result, later maturing varieties such as Flavorburst and Aristotle (also the largest fruited varieties) showed lower productivity than they likely would have without Anthracnose present.

Lodging was significant due to flowering and fruit set before plants reached full vegetative size. Several high wind and rain events also contributed to lodging. CU 4 and Peacework showed more sunscald than other varieties, likely due to lack of vegetation protecting fruit.



Figure 1 *Colletotrichum spp* symptoms on fruit

Early Red Sweet was by far the earliest pepper, though fruit were smallest. Due to this as well as continued prolific production through September, this variety ranked highest in yields by

count, though Ace had highest marketable weight by the end of the season. Other early entries were Peacework, Ace, CU 3 and CU 4. King Crimson and Ace had the nicest fruit shape and size of the relatively early peppers. Aristotle and Flavorburst had by far the largest and most thick-walled fruit but matured roughly two weeks later than the earliest varieties.

Peacework varied for fruit size, shape and color (dark red to orange-red).

Ace, Flavorburst, Early Red Sweet and King Crimson had best flavor in taste tests. Peacework flavor was highly variable.

Grower Trial Feedback

In one non-irrigated trial, King Crimson produced the largest fruit, a much different result than that of the irrigated research farm trial. Early Red Sweet and King of the North were earliest. Early Red Sweet, Peacework and CU 3 were highest yielding in that trial. Overall favorites were Early Red Sweet and Ace, with Early Red Sweet being the best due to taste and length of production. Early Red Sweet and Flavorburst were favorites for flavor. Grower would not grow King Crimson or Peacework again.

At another grower site, Aristotle produced the largest fruit of the trial and was preferred for that reason. Ace fruit size was relatively larger than at research site. King Crimson and King of the north had best plant structure (less lodging). This grower had New Ace planted as a check (their go to variety), and was preferred over trial entries.

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NOVIC 2019 Bell Pepper Trial - Datasheet

Date of Seeding: _____

Date of Transplanting: _____

Did you use mulch? Plastic___ Straw___ Other_____

Did you row cover plants? Yes ___ No ___

Please list any organic sprays applied and describe use: _____

Please check which varieties you successfully grew and evaluated:

- King Crimson
- Ace F1
- King of the North
- Aristotle F1
- Flavorburst F1
- Early Red Sweet
- Peacework
- CU 3
- CU 4

Yield Performance

Please rank varieties based on observed yield of marketable, high quality fruit:

Variety	Date of first harvest	Marketable Yield Ranking
King Crimson		
Ace F1		
King of the North		
Early Red Sweet		
Flavorburst F1		
Aristotle F1		
Peacework		
Cornell Breeding line #3		
Cornell Breeding line #4		

Fruit Quality

Please comment on desirability of fruit aesthetics (size, shape, color) - your own and any customer feedback/sales observations - for each variety:

Variety	Comments on Fruit
King Crimson	
Ace F1	
King of the North	
Early Red Sweet	
Flavorburst F1	
Aristotle F1	
Peacework	
Cornell Breeding line #3	
Cornell Breeding line #4	

Flavor

Please taste the fruits and comment on flavor of the fruits – were any noticeably inferior or superior? Sweetness? Texture?

Variety	Comments on Flavor
King Crimson	
Ace F1	
King of the North	
Early Red Sweet	
Flavorburst F1	
Aristotle F1	
Peacework	
Cornell Breeding line #3	
Cornell Breeding line #4	

For each of the varieties that you grew, would you grow it again? Please provide your thoughts on what you liked or did not like about the variety.

Some examples: Variety A was a week later to mature than most of the varieties. Plants were decimated by pests but produced well anyway. Disease killed the plants on week 4 ending harvest. Fruit size was too small for my market. Despite high yields I won't grow this variety again.

Variety	Comments
King Crimson	
Ace F1	
King of the North	
Early Red Sweet	
Flavorburst F1	
Aristotle F1	
Peacework	
Cornell Breeding line #3	
Cornell Breeding line #4	